

Notice of Allowability

Application No.

10/620,455

Examiner

Stephen G. Sherman

Applicant(s)

LEE, YU-TUAN

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 17 December 2007.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Joe McKinney Muncy on 7 February 2008.

2. The application has been amended as follows:

Please amend claim 1 as follows:

1. A touch-control method of an LCD, which is to sense a touch point on an LCD screen of the LCD when a pressure is applied to the LCD screen, the LCD comprising a counter electrode and a substrate having a plurality of data lines~ and a plurality of scan lines and a plurality of pixels, wherein the scan lines are connected to a gate of a TFT in each respective pixel, and the data lines are connected to a source of the TFT in each respective pixel, the method comprising:

a first touch-position sensing step, which detects values of liquid crystal capacitances formed between the scan lines needed to be detected and the counter electrode, respectively, and detects a scan-line-direction touch position according to the

values of the liquid crystal capacitances formed between the scan lines needed to be detected and the counter electrode during idling time in-between writing periods, each of the scan lines turning on sequentially to write image data into the LCD screen in the writing periods, wherein a part of the counter electrode corresponding to the pressure is indented, the distance between the part of the counter electrode and scan line is reduced, and the distance between the part of the counter electrode and data line is reduced;

a charging step, which charges a voltage signal into each of the data lines needed to be detected after the scan-line-direction touch position is detected; and a second touch-position sensing step, which detects values of liquid crystal capacitances formed between the data lines needed to be detected and the counter electrode, respectively, and detects a data-line-direction touch position according to the values of the liquid crystal capacitances formed between the data lines needed to be detected and the counter electrode after the voltage signal is charged,

wherein, the scan-line-direction touch position and the data-line-direction touch position indicate a position of the touch point.

Please amend claim 16 as follows:

16. An LCD (liquid crystal display), which has a counter electrode and a substrate having a plurality of data lines, and a plurality of scan lines and a plurality of pixels, wherein the scan lines are connected to a gate of a TFT in each respective pixel,

and the data lines are connected to a source of the TFT in each respective pixel, the LCD comprising:

a first sensing circuit, which respectively electrically connects to the scan lines needed to be detected, detects values of liquid crystal capacitances formed between the scan lines needed to be detected and the counter electrode, and detects a scan-line-direction touch position according to the values of the liquid crystal capacitances formed between the scan lines needed to be detected and the counter electrode, wherein a part of the counter electrode corresponding to a pressure is indented, the distance between the part of the counter electrode and scan line is reduced, and the distance between the part of the counter electrode and data line is reduced;

a timing control circuit, which electrically connects to the first sensing circuit and controls the first sensing circuit to detect the liquid crystal capacitances formed between the scan lines needed to be detected and the counter electrode during idling time in-between writing periods, each of the scan lines turning on sequentially to write image data into the LCD screen in the writing periods;

a voltage-signal generating circuit, which electrically connects to the timing control circuit and each of the data lines, wherein the timing control circuit controls the voltage-signal generating circuit to charge a voltage signal into each of the data lines needed to be detected after the scan-line-direction touch position is detected; and

a second sensing circuit, which respectively electrically connects to each of the data lines needed to be detected, detects values of liquid crystal capacitances formed between the data lines needed to be detected and the counter electrode, and detects a

data-line-direction touch position according to the values of the liquid crystal capacitances formed between the data lines needed to be detected and the counter electrode after the voltage signal is charged.

Allowable Subject Matter

3. Claims 1-28 are allowed.
4. The following is an examiner's statement of reasons for allowance:

The primary reason for allowance is the combination of the limitations that the capacitance between a counter electrode and scan lines connected to the gate of the transistors are detected first, then a voltage is charged into the data line, which are connected of the source of the transistors, and then after the voltage is charged the capacitance between the counter electrode and the data lines is detected, where the position according to the two sensing steps indicated a touch point, which is not found singularly or in combination within the prior art.

The closest available prior art references (Ise, Ikeda, Knapp, Nohno et al.) fail to teach these limitations of the claims. Ikeda discloses detecting a capacitance between scan/data lines and a counter electrode to determine a touch, however, does not teach the recited sensing steps of the claims. Ise and Nohno et al. each disclose of two touch-position sensing steps wherein a position of touch is determined during idling time

in-between writing periods, however, the prior art references fail to teach singularly or in combination of detecting the capacitance between a counter electrode and scan lines connected to the gate of the transistors, then charging a voltage into the data line, which are connected of the source of the transistors, and then after the voltage is charged, detecting the capacitance between the counter electrode and the data lines.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

11 February 2008

AMR A. AWAD
SUPERVISORY PATENT EXAMINER
